

# 2000

## Outreach Education



▲ **Children participate** in a hands-on environmental education program along the Green River in Dinosaur National Monument (Colorado and Utah). The Young Naturalist Program gives participants a chance to discover river organisms like aquatic insects, identify their habitat needs and food webs, and relate them to changes in river flow from dams upstream.

*Resource protection that hides in the woods and does its thing shyly, silently, and without explaining what it's doing is not protection at all. Unobserved, it will be unsustainable, unappreciated. Resource protection has to walk out of the park in the heart of the visitor.*

—Roger Kennedy  
14th Director of the National Park Service

Countless Americans first stepped into wilderness and developed a better understanding of themselves and their country's fine natural heritage in a unit of the national park system. The National Park Service facilitates this role by stimulating a sense of public ownership, understanding, and appreciation of parks through its educational programs. This lasting and powerful effect has the potential to become even greater. As the following articles for 2000 indicate, the National Park Service is developing innovative educational programs that reach people beyond parks, encourage their involvement in natural resource management, and invite them to develop and share their own meanings for parks. To do this properly requires scholarship and inclusion of all people and perspectives. By following this approach, outreach education, like effective in-park interpretation, can enable the National Park Service to help people see their own reflections in parks and to contribute to their care.

## Developing ambassadors for endangered fish

By David Whitman

✉ david\_whitman@nps.gov  
Chief of Interpretation, Dinosaur  
National Monument, Colorado and  
Utah

Children are the key to long-term preservation of park resources. For 10 years Dinosaur National Monument has provided a summer Young Naturalist Program for local children 8–10 years of age. Through this program children experience nature firsthand and discover some of the interconnections in the natural world and their relationship to it. They contemplate the concept of community and how an ecosystem works. Finally they have the opportunity to use this information and their observations to predict outcomes for a variety of river management scenarios that affect several species of endangered fish and other natural resources at Dinosaur National Monument.

The U.S. Fish and Wildlife Service has issued a biological opinion concerning the flow and temperature recommendations for the endangered native fish in the upper Green River: bonytail, razorback sucker, humpback chub, and Colorado pikeminnow. The Bureau of Reclamation is developing an environmental impact statement (EIS) to address the recommended change in water releases from Flaming Gorge Dam, which is upstream of Dinosaur National Monument on the Green River. The prospect of increasing springtime releases from the dam for the benefit of native fish is generating public concern and controversy. Sensitive issues include flooding of agricultural land, increasing mosquito populations, and impacts on power generation.

In 2000, interpreters at the monument changed the afternoon half of the Young Naturalist Program by taking the kids on a river trip. Each child is given an inner tube, life vest, and safety instructions to float down a flat-water portion of the Green River. The boys and girls are literally immersed in the habitat of the endangered fish. Interpreters guide them to a backwater where, under a permit from the Utah Wildlife Resources Division, they use collection equipment to temporarily capture and examine aquatic animals. They discover the

benthic macroinvertebrates and small fish that comprise the bottom of the endangered fishes' food chain. The group discusses predation by the Colorado pikeminnow and the endangered fish's biology, particularly its need for spring floods, clean gravel bars, and backwater environments. Finally, interpreters pose the question, "If a dam were placed in the river, how would this affect the fish?" As a result of this directed discussion the children realize the importance of varied water releases from Flaming Gorge Dam to the survival of the native fish.

*"Children ... discover some of the interconnections in the natural world and their relationship to it."*

Why is this significant? At the end of the day these kids are tired but excited. Their parents commonly report in the post-activity evaluation that their children babbled about the water insects they found, the catfish they caught, the frog swimming in the aquarium. They see their children's excitement and hear why some fish species might become extinct. Their 10-year-old becomes an "ambassador" for endangered native species.

Ten years from now when these "young naturalists" are voting, attending a new Green River EIS scoping meeting, or reading about how county commissioners want to fund a project that may affect fish, they will remember their day on the river and possibly become advocates for the fish. This important interpretive program is taking on this challenge one child and one household at a time.

NPS

## Black Canyon of the Gunnison opens new exhibit about the Gunnison River



The visitor center at Black Canyon of the Gunnison National Park, Colorado, began featuring a new exhibit in 2000 that interprets the historical flows of the Gunnison River at various levels and times of the year. Because most visitors never visit the river itself (an arduous hike is required to reach it), they can now hear what it sounds like by playing recordings of the river at various flows and reading about the corresponding ecological role of its former variable flow rates, for example, in creating beach habitat and in cleaning and establishing gravel beds for eggs of native fish and invertebrates. The exhibit also includes information on changes in vegetation, riverbed morphology, and habitat along the river based on the upstream dams; shows changes in the erosive power and sediment load because of the dams; contrasts natural sounds and quiet in the canyon with noise such as construction equipment and airplanes; and compares the power of the Gunnison River with that of the Colorado River in the Grand Canyon and that of the Mississippi River.

◀ **Sounds of the distant Gunnison River** are brought to visitors and interpreted in an ecological context in a new exhibit at Black Canyon of the Gunnison National Park.



## Watershed science program unites park and neighbors

By Dave Kronk

✉ david\_kronk@nps.gov  
Training Instructor, Pictured Rocks  
National Lakeshore, Michigan

Although it functions as a geographic divide, a watershed also unites its inhabitants who share an interest in maintaining water quality and natural resource health throughout a landscape. This concept was recently used to involve school kids in the vicinity of Pictured Rocks National Lakeshore, Michigan, in a science program that spotlights the many common connections people and park resources have with a watershed.



▲ Students collect stream data near Pictured Rocks National Lakeshore, Michigan, as part of an outreach education program that interprets the importance of science and resource management within the watershed and park. The activities also help kids understand potential human impacts on stream quality.

In spring 2000 the conservation district adjoining Pictured Rocks received a grant to set up a local watershed advisory council. The purpose of the council is to advise the community about the conservation and proper use of natural resources within that watershed. It is a strictly advisory group with no legal authority.

The education outreach coordinator for the national lakeshore jumped at the opportunity to be a part of the Munising Bay Watershed Council and help park neighbors understand the importance of science and resource management within the watershed and park. The director of the council was hired in the fall, and together the two quickly joined

forces to plan methods of collecting data on the watershed with help from local schoolchildren. State of Michigan science goals and objectives emphasize that students should be able to apply science concepts to real-world contexts. Thus, finding a middle school teacher who was willing to work with the park and the council to help meet these classroom objectives was not difficult.

*"National lakeshore [staff help] park neighbors understand the importance of science and resource management within the watershed and park."*

The collaboration began with the watershed council director mapping the watershed, identifying its streams, and locating important data collection sites. The park's role was to prepare the students for conducting the water quality tests at various plots, including a site within the national lakeshore. Educational materials from the Izaak Walton League called Hands on Save Our Streams and the GREEN Water Quality Monitoring Kit were used to show students in the classroom how they would go about collecting stream macroinvertebrates; testing the water for pH, dissolved oxygen, temperature, nitrates, phosphates, and turbidity; and measuring stream flow and volume in the field. The teacher divided his classes into teams responsible for different tests or data collections. A high school journalism teacher joined in by sending a photographer and reporters to document the fieldwork and would later help the watershed council publish a biannual newsletter. Over several days in fall 2000, the participants had a lot of fun collecting real-world stream data in order to better understand their watershed, identify potential natural resource issues, and make informed recommendations to protect watershed quality. The national lakeshore will use the data as part of the resource inventory and possibly the aquatic monitoring program.

The council director and the park coordinator visited the school after the data were compiled and worked with the students to analyze the results. The kids participated in activities from an excellent curriculum called Project WET, which helped them understand potential human impacts on stream quality. In closing, the two activity leaders thanked the teacher and his classes for participating and explained that though conservation districts and national parks are working to protect water quality within their boundaries, some watersheds are very large and extend far beyond park or district boundaries. Therefore, they explained, when citizens become involved in resource management by examining the watersheds in their own backyards, they may also be helping to protect the watersheds of the national parks.



## Student stewardship in Glacier National Park

By Joyce Lapp

joyce\_lapp@nps.gov  
Horticulturist, Glacier National Park

With nearly 2 million visitors annually, Glacier National Park, Montana, faces expanding use and construction. These pressures harm vegetation, denude the ground, allow further invasion by exotic plants, displace animals, and can reduce the ecological and aesthetic values of the park. Soil erosion and loss of vegetation are particularly great in campgrounds and popular scenic areas.

To deal with these resource impacts, since 1988, Glacier National Park has developed a comprehensive native plant program to restore structure, function, and plant diversity of disturbed areas. Indigenous plant material is used to maintain genetic integrity. Whenever possible, native soils and plants are salvaged and stored for replanting. Seeds and cuttings are collected annually and propagated in the park's native plant nursery for use in restoration.

A lasting solution to resource degradation is perhaps the greatest challenge in restoration. To that end, Glacier National Park has entered into an exciting cooperative relationship with several local schools to engage students in the park restoration program as advocates and practitioners. Funds from the Natural Resource Preservation Program and the Recreational Fee Demonstration Program have provided money for the construction of two cooperative greenhouses in neighboring schools on either side of the park. The greenhouses serve as laboratories for students and provide needed native plant materials for restoration in park areas.

In FY 2000, more than 900 students participated in environmental education activities as part of this Student Stewardship Program. In fall 1999, they toured the native plant nursery in the park and discussed the cause of disturbances, helped determine restoration needs, and collected seed at various campgrounds. During winter 1999–2000, park staff provided classroom instruction in botany, seed biology, and plant propagation and assisted students in the production of nearly 9,000 native plants. In late spring 2000 the students participated in site preparation, planting, monitoring, and removal of exotic plants. They used the seed and plants they had



▲ **The Student Stewardship Program** emphasizes the cultural importance of native plants in the park and encourages participation of a diverse group of students and teachers from the area. Students learn not only how to grow native plants, but also the Blackfeet names (shown here) for and traditional uses of the plants.

collected and grown. In summer 2000 the students assisted in the revegetation of more than 1 acre (0.4 hectare) of denuded ground in five campgrounds.

Also in 2000, park staff used funds from the Parks as Classroom program to develop a workbook called *STARS* (Students Taking Action for Restoration and Stewardship) for teachers. Modules of the workbook tie the activities of the Student Stewardship Program to the state-required science curriculum.

The Student Stewardship Program furthers lasting improvements in the park by an ethnically diverse group of staff, students, faculty, and community members. The program members' exchange of ideas and application of skills in the restoration enhance public appreciation for resource management, land stewardship, and support of park heritage.



▲ **Nine hundred students** from eight schools participated in the Student Stewardship Program in 2000, collecting seed and growing 8,800 native plants for campground restoration in Glacier National Park. The program provides curriculum-based learning and life skills experience in science, horticulture, mathematics, record keeping, experimental design, teamwork, and cultural and natural resources.